MATERIAL SAFETY DATA SHEET

Date of prep 05-25-84

I. PRODUCT IDENTIFICATION

MANUFACTURER'S NAME: UNION INK COMPANY, INC.
ADDRESS: 453 BROAD AVENUE RIDGEFIELD, N.J. 07657

EMERGENCY TELEPHONE: 201-945-5766
INFORMATION TELEPHONE: 201-945-5766

PRODUCT CLASS: ALIPHATIC POLYISOCYANATE MANUFACTURERS CODE IDENTIFICATION

TRADE NAME: PACH-9120
FABRIC PATCH CATALYST

II. HAZARDOUS INGREDIENTS

COMPONENTS:	%:	CURRENT TLV:
Xylene (CAS # 1330-20-7)	12.5	100 ppm
N-Butyl Acetate (CAS # 123-86-4)	12.5	150 ppm

Hexamethylene diisocyanate (HDI) (CAS # 822-06-0) monomer content less than 0.7% based on resin solids at time of manufacture. However, after 3-6 months storage, the free monomer content may rise to a maximum of 1.6%. — 0.02 ppm (suggested)

III. PHYSICAL DATA

APPEARANCE.....: Liquid
COLOR.....: Clear/Pale Yellow
ODOR.....: Of Solvent
MOLECULAR WEIGHT.....: ca 500 (polyisocyanate)
VAPOR PRESSURE.....: ca 7.5 X 10 -5 mmHg @ 20° C (polyisocyanate)
SPECIFIC GRAVITY.....: 1.06 @ 20°C
BULK DENSITY.....: (Weight per gal.) 8.85 lb/gal.
SOLUBILITY IN WATER.....: Insoluble/reacts with water
% VOLATILE.....: ca 30% by volume

IV. FIRE & EXPLOSION DATA

FLASH POINT °F(°C).....: 91°F (33°C) P.M.C.C.

FLAMMABLE LIMITS -	XYLENE	n-butyl acetate @ 100°F. (38°C)
Lel.....:	1.0	1.38
Uel.....:	7.0	7.60

EXTINGUISHING MEDIA.....: Foam, Dry Chemical, Carbon Dioxide

SPECIAL FIRE FIGHTING PROCEDURES/UNUSUAL FIRE OR EXPOSION HAZARDS:
Full emergency equipment with self-contained breathing apparatus should be worn. During a fire irritating and highly toxic gases (See Reactivity Data) and smoke are present from the decomposition/combustion products. Isolate from heat, electrical equipment, sparks and open flame. Closed container may explode when exposed to extreme heat or burst when contaminated with water (CO_2 evolved). Solvent vapors may be heavier than air. Under conditions of stagnant air, vapors may build up and travel along the ground to an ignition source which may result in a flash back to the source of vapors.

V. HEALTH EFFECTS DATA

ANIMAL TOXICITY - (Similar Product)

OTHER.....: Respiratory effects (mice) sensory and pulmonary irritation. (Polyisocyanate)

Ames test - Negative. (Polyisocyanate)

HUMAN EFFECTS OF OVEREXPOSURE.....: To vapor and/or mist: Can cause irritation to skin, eyes and respiratory tract (nose, throat, lungs). Symptoms may be watering of eyes, dryness of throat, coughing, headache, tightness in chest or burning sensation. Allergic skin or respiratory reaction may occur in some individuals. Respiratory sensitivity results in asthma-like symptoms on subsequent exposure even below the TLV. Skin sensitivity results in allergic dermatitis which may include rash, itching, hives and swelling of extremities. Headache, dizziness or nausea may be experienced by some as a result of exposure to solvents.

VI. EMERGENCY & FIRST AID PROCEDURES

EYE CONTACT.....: Flush with clean, lukewarm water (low pressure) for at least 15 minutes, occasionally lifting eye lids. Obtain medical attention.

SKIN CONTACT.....: Remove contaminated clothing. Wash affected areas thoroughly with soap and water. Wash contaminated clothing thoroughly before re-use.

INHALATION.....: Move to an area free from risk of further respiration as needed. Obtain medical attention.

INGESTION.....: CONSULT PHYSICIAN.

VII. EMPLOYEE PROTECTION RECOMMENDATIONS

EYE PROTECTION.....: Safety glasses, splash goggles or face shield. Contact lenses should not be worn.

SKIN PROTECTION.....: Chemical resistant gloves. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area protected only by the cream to a minimum.

RESPIRATORY PROTECTION.: Use respirator that is recommended or approved for use in isocyanate containing environments (air purifying or fresh air supplied). Consider type of application and environmental concentrations. In spray application you must protect against exposure to both vapor and spray mist. Observe OSHA regulations for respirator use (29 CFR 1910.134). When the airborne isocyanate monomer concentrations are known to be below 0.2 ppm and if the polyisocyanate (polymeric, oligomer) concentrations are known to be below 10 mg/m 3, a properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing spray paint environments, will provide sufficient protection. When the airborne isocyanate concentrations are not known, or if either of the above guidelines is exceeded, or if spraying is performed in a confined space or area with limited ventilation, the use of a positive pressure supplied air respirator is mandatory.

VENTILATION.....: Ventilation as required to maintain air concentrations below TLV. If material is spray-applied, ventiltion should be provided and a respirator worn. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

OTHER.....: Safety showers and eyewash stations should be available.

Educate and train employees in safe use of product.

Follow all label instructions.

VIII. REACTIVITY DATA

STABILITY.....: Stable under normal conditions
POLYMERIZATION.....: None under normal conditions
CONDITIONS TO AVOID...: Contact with moisture and other materials which react with isocyanates. Temperature above maximum storage temperature.

INCOMPATIBILITY (MATERIALS TO AVOID).: Avoid contact with water, alcohols, amines, strong bases, metal compounds or surface active materials.

HAZARDOUS DECOMPOSITION PRODUCTS.....: By fire: CO2, CO, oxides of nitrogen, traces of HCN, HDI.

IX. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Evacuate non-essential personnel. Remove all sources of ignition. Ventilate the area. Equip clean-up crew with appropriate protective equipment (See Employee Protection Recommendations). Dike or impound spilled material and control further spillage if feasible. Notify appropriate authorities if necessary. Cover spill with sawdust, vermiculite, Fuller's earth or other absorbent material; pour liquid decontaminant over spillage -- allow to react at least 10 min., collect material in open containers -- add further amounts of decontamination solution. Remove containers to safe place -- cover loosely. Wash down area with liquid decontaminant and flush spill area with water. Decontamination solutions: Ammonium hydroxide (0-10%), detergent (2-5%) and balance water; or solution of Union Carbide's Tergitol TMN-10 (2%) and water (80%).

WASTE DISPOSAL METHOD: Waste material must be disposed of in accordance with federal, state and local environmental control regulations. Empty containers must be handled with care due to product residue and combustible solvent vapor. Decontaminate containers prior to disposal.

X. SPECIAL PRECAUTIONS & STORAGE DATA

STORAGE TEMPERATURE (MIN./MAX.).....:32'F (0'C) / 122'F (50'C)
AVERAGE SHELF LIFE...:12 MONTHS AT 77'F (25'C)
SPECIAL SENSITIVITY (HEAT, LIGHT, MOISTURE): If container of material is exposed to heat, container can pressurize and burst. If moisture enters container, pressure can build up due to reaction producing CO 2 which can cause sealed container to pressurize and burst. Do not reseal if contamintion is suspected.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

DANGER! FLAMMABLE
HARMFUL IF INHALED
LIQUID MAY CAUSE EYE AND SKIN IRRITATION
KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME
USE ONLY WITH ADEQUATE VENTILATION
AVOID PROLONGED BREATHING OF VAPOR OR CONTACT WITH SKIN
KEEP CONTAINER CLOSED
WASH HANDS THOROUGHLY AFTER USING

Store in tightly closed container and protect from moisture and foreign materials. At maximum storage temperatures noted, material may slowly polymerize without hazard.
Ideal storage temperature range is 50-81'F (10-27'C).

OTHER PRECAUTIONS:

FOR INDUSTRIAL USE ONLY
KEEP OUT OF THE REACH OF CHILDREN

XI. SHIPPING DATA

D.O.T. SHIPPING NAME.....:	Flammable Liquid NOS
TECHNICAL SHIPPING NAME.:	Polyisocyanate, contains xylene
D.O.T. HAZARD CLASSIFICATION.....:	Flammable Liquid
UN/NA NO.....:	UN1993
REPORTABLE QUANTITY.....:	Xylene: 1,000 lbs; butyl acetate: 5000 lbs.
D.O.T. LABELS REQUIRED..:	Flammable Liquid
D.O.T. PLACARDS.....:	Flammable
FRT. CLASS PKG.....:	Chemicals, NOI (Isocyanate) NMFC 60000
APPROVED BY.....:	D.O. BRUCE
TITLE.....:	Manager, Industrial Hygiene & Product Safety
DATE APPROVED.....:	05/25/84

==========

UK = UNKNOWN N.E. = NOT ESTABLISHED N.A. = NOT APPLICABLE

FLEXIBLE PRODUCTS COMPANY
WILFLEX REDUCER #1
MATERIAL SAFETY DATA SHEET
MAY 12, 1986

Each customer should study this Material Safety Data Sheet and become aware of the Product Hazards. Reference works or personnel who are expert on ventilation, toxicology and fire prevention/suppression may need to be consulted to adequately utilize the data contained in this Material Safety Data Sheet.

FLEXIBLE PRODUCTS COMPANY
(404) 428-2684 FOR EMERGENCY CALL CHEMTREC (800) 424-9300

FLEXIBLE PRODUCTS COMPANY
Vinyl Division
1007 Industrial Park Drive
Marietta, GA 30061

I. PRODUCT IDENTIFICATION

Product Name: Wilflex Reducer #1
Product Number:
Chemical Name: Phthalate Plasticizer Mixture
Chemical Family:
Molecular Weight: Mixture
Synonyms:

II. HAZARDOUS INGREDIENTS

No TLV has been established for the mixture or the individual components by the ACGIH.

III. PHYSICAL DATA

Boiling Point.....: Greater than 500 Deg. F.

Vapor Density.....: Greater than 5.0.
(AIR=1)

Vapor Pressure.....: 3.0×10^{-7} mm Hg (calculated)
@ 70 deg. F

Specific Gravity....: .92
@ 25 deg. C

Water Solubility....: Negligible.

IV. FIRE & EXPLOSION DATA

Flash Point.....: Greater than 400 Deg. F. (C.O.C.)

Extinguishing Media..: Dry Chemical (e.g. mono ammonium phosphate, potassium sulfate and potassium chloride), carbon dioxide, chemical foam or water spray.

Special Fire Fighting: Procedures: Full emergency equipment with self-contained breathing apparatus. Pressure can build up in drums and other closed containers exposed to temperatures found in fires. A cold water stream should be directed to cool fire exposed containers.

V. HEALTH AND SAFETY INFORMATION

Animal Testing Data - Most Toxic Component Only.

Oral LD_{50}	30 gm/kg	Animal	rat
Dermal LD_{50}	20 gm/Kg	Animal	rabbit
Inhalation LC_{50}	Not determined	Animal	N/A

Skin	____	Severe	____	Moderate	X	Mild	Animal	Rabbit
Eye	____	Severe	____	Moderate	X	Mild	Animal	Rabbit

The above toxicological data on the individual components of the mixture summarizes the available supplier's Material Safety Data Sheets. Additive or synergistic effects of the components of this mixture have not been considered.

V. HEALTH AND SAFETY INFORMATION CON'T.

Human Effects

Inhalation..: Respiratory tract irritation if mists are inhaled. No chronic effects have been determined.

Skin.....: Generally regarded as non-irritating, non-fatiguing and non-sensitizing.

Eyes.....: Mild eye irritant.

Ingestion...: Can cause gastrointestinal irritation, nausea, vomiting and diarrhea.

VI. EMERGENCY FIRST AID PROCEDURES

EYE CONTACT.....: Flush with clean lukewarm water (low pressure) for at least 15 minutes. Obtain prompt medical attention.

SKIN CONTACT.....: Wash thoroughly after handling.

INHALATION.....: Mists: Remove to well ventilated area free from risk of further exposure. Treat symptomatically.

INGESTION.....: Consult a physician.

VII. EMPLOYEE PROTECTION RECOMMENDATIONS

EYE PROTECTION.....: Safety glasses recommended.

SKIN PROTECTION.....: Wear protective gloves to prevent unnecessary contact.

RESPIRATORY PROTECTION.....: An appropriate NIOSH approved respirator for organic vapor and mist must be worn if exposure is likely to exceed exposure limits (Section II). Observe OSHA regulations for respirator use (29CFR 1910.134)

VENTILATION.....: Good general ventilation must be used. Local exhaust ventilation may be needed to control air contamination below recommended exposure limits.

OTHER.....: Safety showers and eyewash stations should be available and clearly marked. Educate employees in the safe use of this product and related safety equipment.

VIII. REACTIVITY DATA

STABILITY.....: Stable under normal conditions
POLYMERIZATION.....: Hazardous polymerization will not occur

INCOMPATIBILITY.....: Strong oxidizing agents
(Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS.....: As with all organics, carbon monoxide will be formed during combustion.

IX. SPILL OR LEAK PROCEDURES

IF MATERIAL IS SPILLED OR RELEASED:
Spills should be absorbed on a suitable medium such as saw-dust, clay or filtercel and disposed of in compliance with federal, state and local environmental control regulations.

IX. SPILL OR LEAK PROCEDURES CON'T.

WASTE DISPOSAL METHOD: Incineration is the preferred method. Again, check local, state and federal regulations for compliance procedures.

X. SPECIAL PRECAUTIONS AND STORAGE DATA

Storage Temperature...: Recommended below 120 Deg. F.

Storage Conditions....: Do not store near flame, excessive heat or strong oxidants.

NOTE: The information contained herein is derived from information made available to Flexible Products Company through our suppliers. We believe the information to be current and as complete as available. Update will occur as increased information is made available to us. Since the use of the product and this information are not within the control of Flexible Products Company, it is the users obligation to determine the conditions of safe use of the product.

Prepared by: George A. Hart
Date: May 12, 1986
Supersedes: All Previous